

REMARKS

By this amendment, Applicants have amended the claims to more clearly define their invention.

In particular, claim 1 has been amended to recite that the fillers are present in an amount to reduce the permeability of the structure calculated from the permeability of the polymer material alone and from the amount of hydrocarbons released through the polymer material for the duration of life of the structure. See, e.g., the paragraph bridging pages 3 and 4 of Applicants' specification. Claim 8 has been amended to correct a clerical error and new claim 14 to define a further aspect of the present invention. Claim 14 is supported by, e.g., the description at page 6, line 21 et seq. of Applicants' specification.

Applicants thank the Examiner for the telephone interview conducted between the Examiner and the undersigned on November 17, 2008. During the interview, the undersigned proposed amending claim 1 to recite the amount of fillers present in the mixture of polymer material and fillers and the manner in which the amount is calculated. The Examiner indicated such an amendment would raise new issues requiring a further search and, therefore, would not be entered in view of the finality of the Office Action.

Claims 1, 3, 4-6 and 6-8 stand rejected under 35 U.S.C. 102(b) as being anticipated by European patent application publication number EP 1108598 A2 to Ellis with evidence provided by U.S. Patent Application Publication No. 2003/0049398 A1 to Ellis. Claims 5, 9, 10 and 12 stand rejected under 35 U.S.C. 103(a) as being unpatentable over EP '598 to Ellis. Applicants traverse these rejections and request reconsideration thereof.

The present invention relates to a controlled hydrocarbon permeability multilayer structure and to a tank for a motor vehicle and a fuel line for a motor vehicle including such a structure. According to the present invention, the structure includes at least one inner polymer layer and at least one outer polymer layer comprising a mixture of polymer material and of fillers. The fillers are mineral fillers and selected to adsorb and to trap an amount of hydrocarbons discharged through the inner layer so as to reduce the permeability of the structure.

According to the present invention, the fillers are present in an amount to reduce the permeability of the structure calculated from the permeability of the polymer material alone and from the amount of hydrocarbons released through the polymer material for the duration of life of the structure. The amount of polymer fillers can be optimized so that the fillers are present in a minimum amount to absorb and trap all of the hydrocarbons calculated to be released through the polymer material alone for the duration of life of the structure. See, e.g., claim 14.

EP '598 to Ellis discloses a permeation barrier fuel tank for a vehicle that includes a shell 12 having a wall formed from a plurality of layers. The layers include at least an inner layer 30, an outer layer 34 and a fuel permeation barrier layer 32 disposed between the inner layer 30 and the outer layer 34 and being made of a nanocomposite polymer. The nanocomposite polymer is a polymer material in which a small quantity of a "platy filler material" has been uniformly dispersed. See, paragraph 0014 of EP '598. As disclosed in paragraph 0016 of EP '598, the "platy filler material" presents an efficient obstacle to the transport, i.e., diffusion, of penetrant molecules, such as those normally found in fuels. On the other hand, the mineral filler in the outer layer of the structure of the present invention is selected to adsorb and to trap an amount of hydrocarbons discharged through the inner layer.

Rather than disclosing that the platy filler material adsorbs and traps hydrocarbons, EP '598 discloses that the platy filler material presents an efficient obstacle to the transport of molecules found in fuel.

While disclosing that the platy filler material can be present in an amount of 0 to 15 wt % in 0014 of Ellis '598, there is no disclosure in Ellis '598 that the amount should be calculated from the permeability of the polymer material alone and from the amount of hydrocarbons released through the polymer material for the duration of life of the structure (see claim 1) or should be a minimum amount to adsorb and trap all of the hydrocarbons calculated to be released through the polymer material alone for the duration of life of the structure (see claim 14).

Accordingly, EP '598 does not disclose and would not have rendered obvious the presently claimed invention.

Claim 2 stands rejected under 35 U.S.C. 103(a) as being unpatentable over EP '598 in view of U.S. 6,117,328 to Sikdar et al. Applicants traverse this rejection and request reconsideration thereof. The deficiencies of EP '598 are noted above.

The Sikdar et al. patent discloses a pervaporation membrane used for removing volatile organic compounds from wastewaters. As noted at column 1, lines 18-23 of Sikdar et al., pervaporation is a method for removing, concentrating and recovering substances from a liquid by sorbing in a pervaporation membrane the component to be removed, followed by diffusion and evaporation of the component or components to the other side of the membrane followed by condensation. The pervaporation membrane in Sikdar et al. is prepared by dispersing at least one hydrophobic adsorbent such as activated carbon uniformly into a polymer matrix.

Since the object of EP '598 is to provide a permeation barrier layer, while the object of pervaporation is to diffuse a component or components to the other side of

the membrane, there would have been absolutely no reason to modify the teachings of EP '598 with those of Sikdar et al. Thus, there would have been no reason to use activated carbon or zeolite, the absorbing component in Sikdar et al., in the permeation barrier fuel tank of EP '598.

For the foregoing reasons, claim 2 is patentable over the proposed combination of references.

Claim 13 stands rejected under 35 U.S.C. 103(a) as being unpatentable over Ellis '598 and U.S. Patent No. 5,508,330 to Coughlin et al. Applicants traverse this rejection and request reconsideration thereof.

The Examiner has cited the Coughlin et al. patent as allegedly teaching that it is known in the barrier material art to perform fluorination on the inside of containers for holding gasoline. However, even assuming, arguendo, the Coughlin et al. patent to disclose what is alleged in the Office Action, it is submitted nothing in Coughlin et al. remedies any of the basic deficiencies noted above with respect to Ellis '598. Accordingly, claim 13 is patentable over the proposed combination of references, at least for the reasons noted above.

In view of the foregoing amendments and remarks, favorable reconsideration and allowance of all the claims now in the application are requested.

Please charge any shortages in the fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account No. 01-2135 (612.44509X00) and please credit any excess fees to such deposit account.

Respectfully submitted,

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